Synopsis of Herring Round Haul Conversion Issue - Its Developmental History, Analysis of the Round Haul Association's 1995 Proposal, And Pertinent Management Issues

I. Developmental History of the Conversion

The conversion of round haul permits to gill net permits in the San Francisco Bay Pacific herring fishery was adopted by the California Fish and Game Commission (Commission) in August 1994 and implemented by the Office of Administrative Law in September 1994, following a rather lengthy developmental history. The regulation provides for voluntary transfer to gill net gear with a multi-year series of decreasing incentives, followed by a mandatory conversion of remaining round haul permits in 1998 (five fishing seasons after regulation implementation). Voluntary conversion to a special gill net permit authorizes the permittee to fish for two gill net quotas for as long as the permit is held by the current permittee. The following synopsis explains the State's actions on this issue and demonstrates that ample opportunity was provided for public input and joint development of this regulation.

The California State Legislature gave the California Fish and Game Commission management authority for the Pacific herring fishery in 1973 (Fish and Game Code Section 8550). Five round haul permittees were the first participants at the inception of the roe herring fishery in San Francisco Bay in 1972, with fleet size peaking at 66 round haul permits in 1976-77. Gill nets were subsequently authorized for use in the herring fishery in 1974, and both gear types have been active participants since then. Beginning in 1977, the Commission has authorized the exchange of round haul permits for gill net permits.

The Commission began the phase-out of round haul permits in the 1979-80 season, by deciding that no new round haul permits would be issued in the future for San Francisco Bay. (The Commission had already prohibited the use of round haul gear in Tomales Bay in the 1977-78 season, largely due to public sentiment). The planned gradual reduction of the round haul fleet by attrition was hindered by the 1989 action by the California State Legislature to allow the transfer (sale) of herring permits to qualified applicants. Previously, herring permits could only be transferred to partners, heirs, or siblings. Consequently, the round haul fleet stabilized at 42 permittees (of which, ten are presently fishing, instead, in the herring eggs-on-kelp fishery). Currently, 374 gill net, 39 round haul, and 3 "CH", or converted round haul, permits are issued for San Francisco Bay roe herring.

As cited above, the Commission had expressed its intent to create a gill net-only roe herring fishery in 1979. Fishing industry and scientists' concerns about long-term improvements to

the fishery and resource status, and the lack of round haul permit attrition because of permit transferability prompted the Department in 1992 to initiate a public dialogue on this subject.

Department managers have a long notable history of "partnership" with the herring industry, seeking input through the Director's Herring Advisory Committee (DHAC), formal public hearings, and informal town hall meetings. The Department continued this policy, requesting guidance from herring fishery members at the very earliest stages of development of a round haul conversion proposal. Unfortunately, members of the herring round haul industry only provided few general comments. In the ensuing months leading to regulation adoption in August 1994, Department staff received **no** response other than several phone calls by permittees voicing general opposition to any actions. The following chronology lists the public meetings at which this subject was discussed, and individuals could provide input.

March 17, 1992 - Director's Herring Advisory Committee Meeting, Belmont.

March 16, 1993 - Director's Herring Advisory Committee Meeting, Belmont.

April 5, 1993 - Public Meeting on Pacific Herring Fishery, San Rafael.

April 16, 1993 - Round Haul Fishermen's Meeting, Youth Center, Dennis the Menace Park, Monterey.

August 23, 1993 - Fish and Game Commission Public Meeting, Sacramento.

March 21, 1994 - Director's Herring Advisory Committee Meeting, San Francisco.

April 11, 1994 - Public Meeting on Pacific Herring Fishery, San Rafael.

June 1994. The informative digest (listing proposed regulation changes, including the round haul conversion) of the STATEMENT OF PURPOSE FOR REGULATORY ACTION was mailed to all herring permittees by the Commission.

August 5, 1994 - Fish and Game Commission Public Meeting, San Luis Obispo.

August 26, 1994 - Fish and Game Commission Public Meeting, South Lake Tahoe.

The adopted herring regulations implementing the round haul permit conversion represent the culmination of a carefully

considered process of analyses on the biological, social and economic effects of the transition to an all-gill net herring fishery in San Francisco Bay and a concerted effort to work with the herring industry. The phase-in of such a conversion over a five-year period is intended to provide a planning horizon to permittees and to reduce the short-term economic dislocation that some individuals may suffer during this transition.

II. Department Comments on 1995 Proposal of San Francisco Round Haul Association

The Department has reviewed the Round Haul Association's proposal and finds the proposed regulatory measures to have minimal benefits regarding the management concerns previously identified by the Commission and the Department. This proposal ignores several of the principal reasons for the conversion, including longstanding Commission policy and fishery yield analyses, and offers critiques of four of the Department's original concerns regarding round haul fishing for herring. The Department has the following brief comments to the four issues identified in the Round Haul Association proposal.

1) Wrap-and-Release Mortality The Department agrees that immediate or latent mortality to herring concentrated in a round haul net and subsequently released has not been quantified. However, anecdotal comparisons of the Monterey sardine fishery, and its daily capture and release of thousands of tons of sardines, and the San Francisco herring fishery are not appropriate. Pacific herring do not have swim bladders, thus will generally sink when dead, except for spawned-out herring which will float. It seems unlikely that dead herring would wash ashore and accumulate due to strong tidal currents in the Bay or that complaints would be registered. The Department is unaware of any studies on wrap-and-release mortality, for other Pacific herring round haul fisheries on the west coast are very brief with little opportunity for "test" net sets.

2) Differing Age Composition of Round Haul vs. Gill Net Catches As outlined in the original conversion analysis, the size and age compositions of round haul and gill net catches have always been very different (See below and Figures 1,2, and 3). The comment that 2- and 3-year-old herring composed less than 2% of the round haul catch recently is spurious. In the three herring seasons since the Department's analysis, the differential harvesting characteristics of the gears remain. Additionally, fishing has negligible or little influence on the recent increase in numbers of 2-year-olds in the population which is generally attributed to favorable environmental conditions.

3) Round Haul Gear Effects on Herring Behavior This issue was originally raised by the Department as a minor aspect of round haul fishing. The Department has never alleged that round haul nets "dam or impede tidal influences". The alleged disruption of herring schooling behavior was merely cited as an often-repeated claim by gill net fishermen which has not been substantiated by Department staff.

4) Vessel Traffic Disruptions The Department agrees that potential obstruction of vessel traffic by round haul vessels while fishing has historically not been an area of concern.

Round Haul Association Management Proposal The Association's proposal appears to be a return to pre-conversion regulations, with two modifications. First, shortening the herring season by ten days will not buffer fluctuations in year class strength, as alleged, nor will it have a demonstrable effect on fishery practices. Round haul permittees are primarily regulated by individual catch quotas, and little herring spawning (and corresponding fishing effort) has taken place in the last ten days of a season (early March). For example, during seven of the last ten years **no** round haul landings occurred at all in the last ten days of a season, and in the remaining three seasons, landings in a season's last ten days only ranged from 1 to 21 tons (<1 to 1% of total landings).

Second, it is unclear to the Department what incidental gear conflicts are to be eliminated, as stated in the industry proposal, by the proposed 8% reduction in the length of an individual net from 240 to 220 fathoms. The proposed reduction in fishing power may reduce individual catch volumes, but it is the non-selective nature of a round haul net itself that is responsible in large part for the size and age composition of herring catches.

III. Management Issues Identified in Original Department Conversion Proposal

The size and age composition of herring catches by round haul and 2 1/8-inch gill nets in the San Francisco Bay fishery are very different (Figure 1). Ages two, three and four herring are only partially vulnerable to gill nets in San Francisco Bay and are completely vulnerable (recruited) to the fishery at age five (Figure 2). In contrast, herring are completely vulnerable (recruited) to round haul nets at age two; and two-, three- and four-year-old herring dominate round haul catches (Figure 3). The two gear types are thus differentially harvesting the various age classes in the population.

1) Wrap-and-Release Mortality. An additional and unquantifiable mortality of herring has occurred in the fishery

1) Wrap-and-Release Mortality. An additional and unquantifiable mortality of herring has occurred in the fishery due to the practice of wrap-and-release of inferior-quality roe herring by round haul vessels. The discard of less desirable fish, whether from small size, low roe count, poor condition, in order to retain higher-valued fish is a practice called "high-grading". Regulatory efforts to halt this practice have had mixed success. The prohibition on this activity is largely unenforceable at night and is extremely hard to enforce at other times, unless an enforcement officer can observe and subsequently document that the discarded, or released, fish were in fact herring. This has proven to be extremely difficult in practice. Wildlife Protection staff have been told by prosecutors that an observer is needed on board each vessel to determine intent to discard herring and to sample fish within the net in order to successfully enforce this regulation. As a result, the fleet itself must voluntarily terminate this practice; but as long as a price differential exists for higher roe-count herring, wrapping-and releasing of inferior-grade herring will probably occur. Conversion to gill net-only fishing would greatly reduce this "high-grading" practice.

2) Egg Production-per-Recruit Analysis. Egg production-per-recruit analysis indicated a substantial increase in population egg production as a result of a shift in recruitment from age two, the entry age into the round haul fishery, to ages three and four - the ages of first entry into the gill net fishery. (Age-three herring are only partially catchable with the present 2 1/8 inch gill net mesh size). At the target harvest rate of 15% of the stock, a 16% gain in egg production would result from a shift in recruitment to age three and a 31% gain by deferring recruitment to age four (Figure 4). Although the relationship between the parent population size and the size of an eventual recruiting year class of fish is unknown for herring, the calculated increase in the population's egg production (due to the increased biomass of older, more fecund herring) would provide an additional measure of safety to buffer oscillations in year class strength.

3) Round Haul Gear Effects on Herring Behavior. Herring fishermen have alleged that the elimination of the use of round haul gear would reduce the disruptive effects of the gear on the pre-spawning, schooling behavior of herring in the Bay. Department staff have not attempted to substantiate this claim of a behavioral effect; it was included here because of repeated contentions by the gill net fleet of such an impact. The veracity of their concerns and the impact of disrupted pre-spawning behavior are unknown.

4) Weight Yield Per Recruit. A standard analysis of yield in weight of herring per recruit to the population predicted lower yields by a shift in the age of recruitment to the fishery from

age two to ages three and four. In other words, an overall lower catch quota could result from a switch to an all-gill net roe fishery. At the target harvest rate of 15%, calculated weight yields would decline by 5 to 23% (Figure 5); but, given that only one-third of any annual quota is taken with round haul gear presently, this catch reduction would apply to only that part of the overall quota.

5) Roe Yield Per Recruit. Yield in terms of total weight of roe from the fishery would increase slightly by shifting recruitment to age three and decrease by as much as 13% by delaying recruitment to age four (Figure 6). An overall decrease in the tonnage of roe landed would probably be the expected outcome from conversion to an all-gill net fleet. The overall weight of roe may be less, according to this analysis, but actual roe counts (per ton, or per landing) would be higher. The quality of the resulting catch would be improved.

Social and Economic Aspects of the Proposal

1) Gear Conflicts. Gear conflicts between gill netters and round haulers would be eliminated. Historically, set gill nets and round haul gear have conflicted, particularly when spawning is underway or when herring are concentrated in small areas of the Bay.

2) Test Boat Program. The test boat program for the round haul fishery has reduced the prevalence of testing and releasing of low roe count fish, but the practice continues, according to Wildlife Protection staff. The inability to effectively enforce this regulation has diminished respect for other herring regulations, in particular, the gill net mesh regulation.

3) Individual Boat Quotas. Beginning with the 1981-82 season the total round haul quota was divided equally among the permittees and became individual allocations or quotas. These quotas ease competition among round haul vessels and increase the economic value of the catch, as permittees become more selective in their retained catch. But this selectivity encourages "high grading" of herring through wrap-and-release with resultant discard mortality of inferior fish. The fishing power of a seine or lampara net is considerable, and the mortality of many tons of herring at a time may occur due to wrap-and-release practices. Individual boat quotas are not routinely employed with the gill net fleet except occasionally to slow the pace of the fishery.

4) Fishing Power of Round Haul Nets. The catching power or capability of a herring seine or lampara net can greatly exceed a vessel quota at low quota levels. This may encourage the discard of surplus catch to ensure the attainment of an individual quota or may encourage the capture and landing of herring in excess of an individual quota. Anecdotal evidence suggests that such

practices are commonplace, but documenting and citing permittees for such offenses is very difficult. The under-reporting of landings is also a problem with the gill net fleet, but the harvesting capacity of a gill net is considerably less than that of a round haul net.

5) Economic Value of Round Haul versus Gill Net Catches. The ex-vessel prices of round haul-caught herring are typically 33 to 60% less than an equivalent amount of gill net-caught herring (five-year averages were $631 and $1450 per ton for round haul and gill net catches), because gill net-caught herring typically are larger, with larger roe sacs and higher roe yields.